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- (22) Application Date: September 30, 1986
- (71) Applicant: Toshiba Co., Ltd.
- (72) Inventor: Yoshiharu TANIYAMA
- (74) Agent: Patent Attorney, Yasuo MIYOSHI, et al.

SPECIFICATION

1. Title of the Invention: TONER CARTRIDGE FOR USE IN
ELECTRONIC COPY MACHINE

2. Claim

(1) A toner cartridge for use in an electronic copy machine, including a toner stirring paddle provided within the toner container, and a toner transporting auger located under the paddle, characterized in that a toner discharge hole is provided in a position in a horizontal direction with respect to the auger, adjacent to one end of the auger.

3. Detailed Description of the Invention

[Object of the Invention]

(Field of Industrial Application)

The present invention relates to an improvement in a

toner cartridge for use in an electronic copy machine. In more detail, this invention relates to an improved toner cartridge for use in an electronic copy machine, which can ensure a stabilized toner discharge amount and prevent a toner clogging.

(Related Art)

In general, a toner cartridge for supplying a toner to an electronic copy machine is constituted in a manner shown in Figs. 4(A), (B) and (C).

Namely, as shown in Fig. 3, a toner cartridge 10 comprises a container 1 for accommodating an amount of toner, a toner stirring paddle 2 provided within the container 1, a toner transporting auger 3 provided under the toner container 1.

In fact, the paddle 2 is so provided that it can rotate about a shaft 5, along with the rotation of the auger 3.

Further, the auger 3, by virtue of an external driving apparatus (not shown), can cause the rotation of a driving gear 4, as well as the rotation of the paddle 2.

Moreover, on one side of the container 1 there is formed a toner discharge hole 6 facing one end 3A of the auger 3, forming an arrangement allowing the toner to be discharged therethrough.

However, if necessary, the above discharge hole 6 may be covered by a cover 7, so that it is possible to prevent

the dropping down or flying about of the toner when not in use.

In this way, the toner T supplied to the container 1 is stirred by the paddle 2 and thus moved downwardly. Therefore, the toner is transported by the auger 3, supplied to a development device (not shown) through the discharge hole 6.

(Problems to be Solved by the Invention)

However, the above described conventional toner cartridge, as shown in Fig. 4(B), is associated with the following problem. Namely, since the discharge hole 6 is provided in the vicinity of one end of the auger 3 in a position perpendicular to the auger 3, toner T can drop down as a free fall through the discharge hole 6. As a result, the toner discharge amount will become irregular, and toner will get clogged in the vicinity of the discharge hole 6.

In fact, an irregular supplying amount of the toner will cause a produced copy too dark or too shallow in its color, hence remarkably lowering the copy quality.

The present invention has been made and accomplished to solve the above problems existing in the toner cartridge of the above described conventional electronic copy machine.

Therefore, it is an object of the present invention to provide an improved toner cartridge for use in an electronic copy machine, capable of ensuring a stabilized toner

discharge amount and preventing a toner clogging.

[Constitution of the Invention]

(Means of Solving the Problems)

Namely, the gist of the present invention is to provide an improved toner cartridge for use in an electronic copy machine, including a toner stirring paddle provided within the toner container, and a toner transporting auger located under the paddle, characterized in that a toner discharge hole is provided in a position in a horizontal direction with respect to the auger, adjacent to one end of the auger.

(Operation)

Since the toner cartridge of the present invention has a toner discharge hole which is provided in a position in a horizontal direction with respect to the auger and is adjacent to one end of the auger, it is possible for the discharge of the toner to be dependent on a pressure of the auger, thereby keeping a toner discharge amount at a constant level, and completely preventing the clogging of the toner in the vicinity of the discharge hole.

(Description of Embodiment)

In the following, with reference to the accompanying drawings, a detailed description will be made to explain a toner cartridge which is for use in an electronic copy machine, and is formed according to the present invention.

Fig. 1 is an explanatory cross sectional view showing

an electronic copy machine which is suitable to incorporate an improved toner cartridge formed according to the present invention. Fig. 2 is a schematic view showing the same constitution. Fig. 3(A) is an explanatory cross sectional view showing the toner cartridge of the present invention, (B) is an explanatory perspective view showing the front end of an auger, and (C) is an explanatory cross sectional view illustrating the same constitution.

At first, with reference to Fig. 1 and Fig. 2, the description will be given to explain the summary about the constitution and the function of an electronic copy machine which is typically an appropriate apparatus to incorporate the toner cartridge formed according to the invention.

Referring to Fig. 1, on the upper surface of the copy machine main body 11 there is provided an original document mounting tray 11A capable of reciprocating in accordance with the copying process. In substantially the central position of the main body 11 is rotatably supported a photosensitive drum 13 which serves as a drum-like development section and rotates in synchronism with the reciprocating movement of the original document mounting tray 11A.

Further, between the photosensitive drum 13 and the original document mounting tray 11A there is provided an exposure device 16 consisting of a lamp 12, a lens 14 and a

mirror 15. In this way, a light can be used to irradiate the original document mounted on the original document mounting tray 11A, with its reflected light being directed to the photosensitive drum 13, thereby effecting an image formation on the base of the original document.

Moreover, surrounding the photosensitive drum 13 there are provided, in the following order and arranged from an image formation position along the rotating direction of the photosensitive drum 13, a development device 17, a transfer device 18, a stripping device 19, an electric charge removal device 20, a cleaning device 21, an electric charge removal lamp 22, and an electric charging device 23. In this way, toner can be supplied from the toner cartridge 10 to the development device 17.

Further, within the copy machine main body 11 there is provided a transport path 24 for transporting each transfer paper P through a space formed between the photosensitive drum 13 on one hand and the transfer device 18 and the stripping device 19 on the other. The base end of the transport path is arranged to face a manually-operated paper feeding guide 25 provided on one side of the main body 11, or to face a paper feeding device 27 provided for independently feeding papers from a paper feeding cassette 26, while the terminal end of the transport path is arranged to face a paper discharge tray 29 through an image fixing

device 28.

In addition, as shown in Fig. 2, the copy machine main body 11 can be separated along the transport path 24 into an upper unit 30 and a lower unit 31. Then, one end of the upper unit 30 is freely pivotably supported by the lower unit 31, thereby forming an engagement which can be opened apart or closed together.

However, at first, the electric charging device 23 and the light exposure device 16 are operated so that an electro-static potential image corresponding to an original document is formed on the photosensitive drum 13.

Afterwards, the electro-static potential image receives an amount of toner T by virtue of the development device 17 so as to be developed. In this way, an image consisting of the development agent can thus be formed on the photosensitive drum 13.

In fact, this image consisting of the development agent is transferred through the transfer device 18 to the transfer paper P which has been fed thereto by the paper feeding device 27. Then, the transfer paper P mounting the image consisting of the development agent and transferred hereto is stripped from the photosensitive drum 13 by the stripping device 19. Subsequently, the image consisting of the development agent is fixed by the fixing device 28, so as to be discharged to the paper discharge tray 29.

On the other hand, an amount of toner not transferred to the transfer paper P but remaining on the photosensitive drum is subjected to an electric charge removal treatment in an electric charge removal device 20, and then removed therefrom by virtue of the cleaning device 21. In this way, the photosensitive body 13 with the remaining toner removed therefrom, is also subjected to an electric charge removal treatment in the electric charge removal lamp 22, thereby allowing the process to enter a next step.

The toner cartridge 10 of the present invention for use in the above electronic copy machine, as shown in Fig. 3(A), (B) and (C), comprises a container 1 for containing toner T, a toner stirring paddle 2 provided in the container 1, and a toner transporting auger 3 provided lower part of the container 1. The paddle 2 is provided to rotate about shaft 5, cooperating with the rotation of the auger 3. Further, the auger 3 is provided also to be rotated through a driving gear 4 which is driven by an external driving device (not shown), as well as to provide a rotating force to the paddle 2.

Further, on one side of the above toner container 1 there is formed a toner discharge hole 6 facing one end 3A of the auger 3, thereby making it sure for the toner T to be discharged therethrough. In particular, the toner discharge hole 6, as shown in Fig. 3(B), is formed at an end position

along the horizontal direction with respect to the auger 3. In this way, the toner T can be transported by a pressure of the auger 3, so as to be discharged from one side of the auger 3 of the container 1.

However, in the accompanying drawings, reference numeral 7 represents a cover which can be provided in view of a real need for preventing the dropping down and flying about of the toner T which has not been used.

Therefore, the toner T supplied to the toner container 1 is caused to move downwardly by virtue of an agitation effected by the paddle 2, and discharged from the discharge hole 6, all depending upon a pressure of the auger 3, so as to be supplied to the development device (not shown). As a result, the toner discharge amount can be constantly maintained at an unchanged level, thus making it possible to completely eliminate an undesired possibility that toner will get clogged in the vicinity of the toner discharge hole 6.

[Advantage of the Invention]

As described in detail above based on the above-embodiment of the present invention, since the toner discharge depends on the pressure of the auger, the toner discharge amount can be made constant, and it is possible to completely eliminate an undesired possibility that toner will get clogged in the vicinity of the toner discharge hole.

Therefore, with the use of the electronic copy machine incorporating the toner cartridge of the present invention, it is possible to obtain a high quality copy.

4. Brief Description of the Drawings

Fig. 1 is an explanatory cross sectional view of an electronic copy machine which is suitable to incorporate an improved toner cartridge formed according to the present invention. Fig. 2 is a schematic view showing the same constitution. Fig. 3(A) is an explanatory cross sectional view showing the toner cartridge of the present invention, (B) is an explanatory perspective view showing the front end of an auger, and (C) is an explanatory cross sectional view illustrating the same constitution. Fig. 4(A) is an explanatory cross sectional view showing a conventional toner cartridge, (B) is an explanatory perspective view showing the front end of an auger, and (C) is an explanatory cross sectional view illustrating the same constitution.

- 1 ... container
- 2 ... toner stirring paddle
- 3 ... toner transporting auger
- 4 ... driving gear
- 5 ... shaft
- 6 ... toner discharge hole
- 7 ... cover

- 11 -

7 ... toner
10 ... toner cartridge

④日本国特許庁(JP)

①特許出願公開

④公開特許公報(A)

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審査請求 本請求 発明の数 1 (全5頁)

③発明の名称 電子複写機のトナーカートリッジ

④特 販 昭61-230087

④出 願 昭61(1986)9月30日

⑥発 明 者 山 本 良 治 神奈川県川崎市幸区阿70番地 株式会社東芝の工場内
⑥出 願 人 株式会社東芝 神奈川県川崎市幸区阿72番地
⑥代 理 人 弁理士 三好 保男 外1名

明 細 書

1. 発明の名称

電子複写機のトナーカートリッジ

2. 発明の要旨

(1) トナー収容容器の内部にトナー供給用のパドルを、更にその下方を成すトナー供給用のオーガーを配置したトナーカートリッジにおいて、前記オーガーは、オーガーと前記下方の間に、トナーの出入れを成すこととされる電子複写機のトナーカートリッジ。

3. 発明の好ましい形態

(発明の目的)

(発明上の利用分野)

本発明は、電子複写機のトナーカートリッジの改良に関し、さらに詳しくは、トナーの供給が安定しており、しかもトナーの供給が容易なことを目的とする電子複写機のトナーカートリッジに関するものである。

(発明の要旨)

一、電子複写機の発振部へトナーを供給

するトナーカートリッジは図4(A)、(B)および(C)に示すように構成されている。

そのうち図4(A)において、トナーカートリッジ10は、トナーTを収容する容器1と、この収容容器1の内部に設けられたトナー供給用パドル2と、前記トナー供給用パドル2の下方に設けられたトナー供給用オーガー3とから構成されている。

前記パドル2は、給送機構としてオーガー3の回転を介して回転する。

またオーガー3は、図示していない発振部へ供給され、発振部を介して供給し、上記のようにパドル2にも回転を与える。

そして、前記収容容器1の一端にはオーガー3の回転を介して回転し、トナー供給口が設けられており、トナーTが供給されるようになっている。

なお上記図4(B)には、前記に示したパドル2が設けられ、本発明におけるトナーTの供給が成るのを防止するようにしている。

したがって、収容容器1に供給されたトナーT

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(S)

特開昭 63-25660

સુબિજલ ૫૩-૫૬૦૬૭ (૨)

働かされておいて、国庫が空っぽになってい
 ても、スズ、物産食料のよびあひめ
 1日によつて金貨ドラム1つよに国庫に貯蔵さ
 れる。

又いてこの計画図が完成後17によりトナ
 ーと対峙されて戦死されることになり、結果は
 17の17によりトナと戦死される。

[illegible]

一方、東芝屋上にて行なわれたりす、風光はドラム上に映現してゐるトアーは、設備高度20で映現されし後、南口附近より映現され、トアーは高度20にて映現されし風光はドラム13に、他はランブラスより映現され、次の工程に入る。

上掲電子記録画に於ける高圧電のトナーコート
U・ク・100、200、400（A）、（B）および（C）

示し示すように、トナー1を既知する両方1と、
 この既知器1の両端に設けられたトナー検出用
 パドル2と、前記トナー検出器1の下に設け
 られたトナー搬送用サーガ3とが設けられて
 あり、前記パドル2は、紙を中点として4ーガ
 ー3の両端と接して用とし、またサーガ3は、
 図示して見ると外面が凹面形状により、紙を中央
 部に向けて引き、パドル2に凹面を与えるよう
 になっている。

そして、第2回戦第51回の一因に於て、オーグは第2回入反戦例として、トナーが戦死するようになっていたが、このトナーが戦死する、第3回(日)に於けるように、オーグは第2回戦の時第2回に戦死してあり、トナーはオーグの圧力により戦死する。戦死第51回オーグの戦死が第2回に於ける。

年の、國に於いて7日、必死に思ひて逃げられ、
 柔佛州内に移りトナー丁の山岳や密林を脱走す
 るためのカパーである。

しにがって、後方第1に位置する機銃トナー一丁は、バドル2により倒れて下方へ落ち、オーガー3で覆われて、窪み孔から、オーガー3の重力に依りて落ちた、既知強固な材料で1に供給されるので、その位置は正確に一定しており、しからず窪み孔の位置で切り生ずる距離が全く正確である。

(ஐந்தாம் பகுதி)

以上、文庫館に上り坪面に説明したように、トナリーの断続はオーガの圧力に依存するものと見なす。トナリー山脈が一たふまり、しかる後出足筋近におけるとナリーの加圧を全く配にすることがない。

したがって本夏場のクーラーリラクを用いた電子貯蔵箱によれば、塩類のすべてのコピー原を貯蔵することができ、

4. 廣岡田田舎草創

図1図は本装置のトナーカートリッジを適用し
に電子粉末の分散状態、図2図は同装置の
図、図3図(人)は本装置のトナーカートリッジ
の断面図、(ロ)は同オーバーヘッドプロジェ

第四、(C)は海所面図面であり、正しく(入)
 るは海田トナーコートリッラの面図面、(D)
 は田ナーコートリッラの面図面、(C)は海所面
 図面である。

1-取柄器
 2-トナー取付バンド
 3-トナー取付用オーガー
 4-墨粉ホウ
 5-墨
 6-トナー吐出孔
 7-カバ-
 7-トナー
 70-トナーカ-トリュウ

人民日報社 三 評 保 員

(C)

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特開昭63-85660 (4)

- 1-収容部
- 2-フタ-蓋部
- 3-フタ-蓋部
- 4-蓋部
- 5-蓋部
- 6-フタ-蓋部
- 7-フタ-蓋部
- 8-フタ-蓋部
- 9-フタ-蓋部
- 10-フタ-蓋部

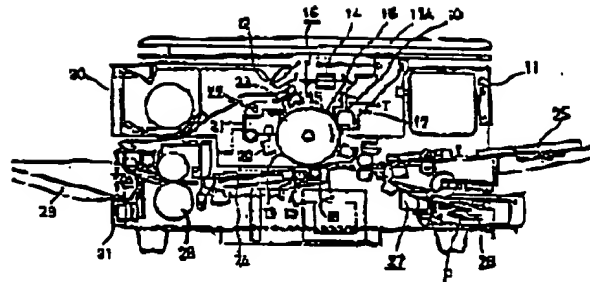


図 1

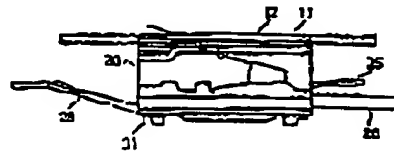
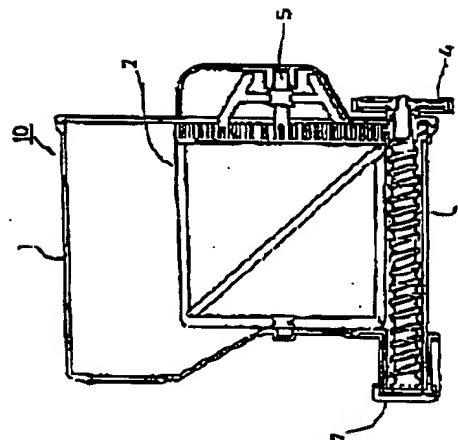


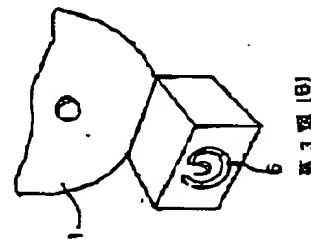
図 2



(A) 図 3



(B) 図 3

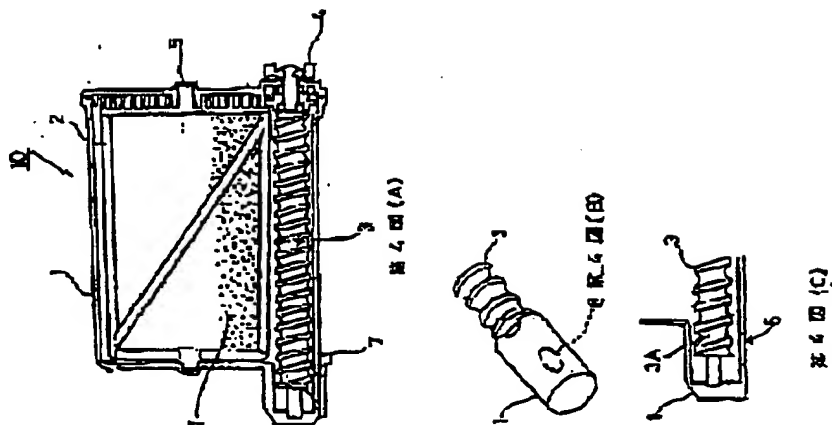


(C) 図 3

(5)

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AK